

Index to Volume 87

January–June 1994

Titles

Awaiting the Crash, *J. Kelly Beatty* and *David H. Levy*, 1:40
 Billion Stars, A Few Million Galaxies, *A. Roberta M. Humphreys* and *Peter M. Thurnes*, 5:32
 Clementine Goes Exploring, *Stewart Nozette* and *Eugene M. Shoemaker*, 4:38
 "Diamond-Ring" Lunar Eclipse, *A. Stephen James O'Meara*, 3:26
 Eise Eisinga's Novel Planetarium, *Govert Schilling*, 2:28
 Endeavour's Excellent Adventure, *Richard Tresch Fienberg*, 4:24
 Harvard Twilight: The Exit of Shapley & Bok, *David H. Levy*, 2:41
 Hidden Worlds: Hunting for Distant Comets and Rogue Planets, *Freeman J. Dyson*, 1:26
 Hubble's Image Restored, *Richard Tresch Fienberg*, 4:20
 Image Processing in Astronomy, *Richard Berry*, 4:30

Journey to Tunguska, *Roy A. Gallant*, 6:38
 Life from the Stars? *Yvonne J. Pendleton* and *Dale P. Cruikshank*, 3:36
 1993: Year of the Perseids, *Peter Brown* and *Jürgen Rendtel*, 1:34
 Nova Cygni 1992: Nova of the Century, *Summer Starrfield* and *Steven N. Shore*, 2:20
 Nova for the Holidays, *A. Steven N. Shore* and *Summer Starrfield*, 4:42
 Participatory Cosmology: The Big Bang Challenge, *Cheryl J. Beatty* and *Richard Tresch Fienberg*, 3:20
 Robert Q. Fugate: Starfire's Magician Optician, *Roger H. Ressmeyer*, 5:20
 Rocket for the 21st Century, *A. Roger H. Ressmeyer*, 2:36
 S&T Test Report: Adorama's Dual-Purpose Telephoto Lens, *Johnny Horne*, 2:55
 S&T Test Report: Baader Prominence Coronagraph, *The. Donald F. Trombino*, 6:51

S&T Test Report: Color Chemistry from Japan and a Red-Hot Film from Kodak, *Johnny Horne*, 1:51
 S&T Test Report: Kendrick Dew Remover System, *The. Dennis di Cicco*, 5:51
 S&T Test Report: Smooth Focusing with JMI's NGF, *Dennis di Cicco*, 3:52
 Searching for Dark Matter, *Mario Mateo*, 1:20
 "Secret" Impacts Revealed, *J. Kelly Beatty*, 2:26
 Sky Gazer's Almanac 1994, *Roger W. Sinnott* and *Alan M. MacRobert*, 1:65
 Solar Eclipses That Changed the World, *Bradley E. Schaefer*, 5:36
 Supersense: The Sidereal Eye, *Bill Parkyn*, 6:30
 Untwinkling the Stars — Part I, *Robert Q. Fugate* and *Walter J. Wild*, 5:24
 Untwinkling the Stars — Part II, *Walter J. Wild* and *Robert Q. Fugate*, 6:20

Authors

A. M. see *MacRobert, Alan M.*
Arnold, H. J. P., book review, 6:56
App, Halton C., letter, 3:9
Baker, Bill, letter, 6:8
Bartusiak, Marcia, Through the Media, Darkly, 5:6
Beatty, Cheryl J., and *Richard Tresch Fienberg*, Participatory Cosmology: The Big Bang Challenge, 3:20
Beatty, J. Kelly, "Secret" Impacts Revealed, 2:26
Beatty, J. Kelly, and *David H. Levy*, Awaiting the Crash, 1:40
Benjamin, Bart, letter, 1:9
Berry, Richard, Image Processing in Astronomy, 4:30
Bond, Gordon, letter, 1:9
Borile, John E., Cometary Prospects for 1994, 1:109
Boyd, Wes, letter, 2:9
Brasch, Klaus, Sky Testing ScotchChrome 800/3200P Film, 2:106
Bronfman, Leonardo, letter, 4:9
Brown, Peter, and *Jürgen Rendtel*, 1993: Year of the Perseids, 1:34
Candelaria, John, letter, 6:8
Cave, Thomas, Ascension Island Astronomy, 2:99
Ceravolo, Peter, Build Your Own Interferometer, 1:94
Clark, Roger N., How Faint Can You See? 4:106
Cook, Bob, letter, 5:8
Cruikshank, Dale P., see *Pendleton, Yvonne J.*
Deatsman, Gary A., letter, 3:9
DeBuvitz, William, letter, 4:8
DeVorkin, David, book review, 2:59
D. H. L. see Levy, David H.
di Cicco, Dennis, S&T Test Report: Kendrick Dew Remover System, 1:51
S&T Test Report: Smooth Focusing with JMI's NGF, 3:52
 Where Are the Ambassadors? 4:66
Dickinson, Terence, Space Art and the Big Picture, 3:6
Diffrient, Roy, Flexure of a Serrurier Truss, 2:91
Doescher, Russell L., see *Olson, Donald W.*
Dunham, David W., Lunar Occultation Highlights for 1994, 1:80
 Planetary Occultations for 1994, 2:72
Dyer, Alan, book review, 4:57
Dyson, Freeman J., Hidden Worlds: Hunting for Distant Comets and Rogue Planets, 1:26
Edberg, Stephen, letter, 1:8
Fienberg, Richard Tresch, And the Winner Is . . . , 3:22
 Endeavour's Excellent Adventure, 4:24
 Hubble's Image Restored, 4:20
 see also *Beatty, Cheryl J.*

French, Alan, letter, 2:9
F. S. see Schaaf, Fred
Fugate, Robert Q. and *Walter J. Wild*, Untwinkling the Stars — Part I, 5:24
 see also *Wild, Walter J.*
Gallant, Roy A., Journey to Tunguska, 6:38
Gaston, David A., letter, 6:8
Gentner, Jay A., letter, 3:8
Goldman, Stuart J., book review, 4:56
 Browsing Computer Bulletin Boards, 3:84
Kuiper Belt Update, 1:30
Gudehus, Donald H., letter, 1:8
Haas, Sissy, Jewels in Lynx, 4:72
Hale, Alan, letter, 1:8
Harrington, Phil, Binocular Highlights, 3:66, 4:66, 5:66, 6:66
 letter, 5:9
 Observer's Guide to Galaxies — II, An, 3:103
Harrison, Edward R., book review, 1:57
Hawley, Phil, letter, 6:8
Hewitt-White, Kenneth, letter, 2:8
Hill, Richard, see *Marcialis, Robert*
Hoag, Arthur A., book review, 5:58
Holtz, John, The Number of Stars Visible, 5:86
Horne, Johnny, S&T Test Report: Adorama's Dual-Purpose Telephoto Lens, 2:55
 S&T Test Report: Color Chemistry from Japan and a Red-Hot Film from Kodak, 1:51
Horst, Ken, letter, 4:8
Houston, Walter Scott, Deep-Sky Wonders, 1:111, 2:108, 3:109, 4:109, 5:108, 6:107
Humphreys, Roberta M., and *Peter M. Thurnes*, A Billion Stars, A Few Million Galaxies, 5:32
Hunter, Tim, letter, 6:9
Imirie, Paul, letter, 1:9
Isles, John, Beta Lyrae Revisited, 6:72
 Hind's Crimson Star Nears Maximum, 3:72
Jamieson, Scott, "Think Dob" but Build Equatorial, 5:92
Johnston, Bill, Astrocomputing: 15 Years and Counting, 1:89
Killian, Anita M., book review, 3:59
Knisely, David, letter, 2:9
Knott, M. Leon, Selling Astronomy to the Great American Public, 6:96
Krupp, E. C., Rambling Through the Skies, 1:70, 2:64, 3:64, 4:64, 5:64, 6:64
Levy, David H., As the Hour Nears, 1:44
 Harvard Twilight: The Exit of Shapley & Bok, 2:41
 Star Trails, 1:105, 2:101, 3:100, 4:101, 5:102, 6:98
 see also *Beatty, J. Kelly*
Linsky, Jeffrey L., letter, 5:8
Livingston, William C., images, 3:32
Longair, Malcolm S., book review, 3:60
Lorenzin, Tom, book review, 5:57
MacDonald, William S., letter, 5:9
McDowell, Jonathan, Mission Update, 1:16, 2:16, 3:16, 4:16, 5:16, 6:16
MacRobert, Alan M., Beginner's Book List, 2:50
 Finding Uranus, Neptune, and Pluto, 4:77
 Four Asteroid Appulses, 3:75
 How to Start Right, 2:48
Laetitia and *R Leonis*, 3:76
 Mastering the Virgo Cluster, 5:42
 May 10th Annual Solar Eclipse, The, 1:78
 May 24th Partial Lunar Eclipse, The, 5:77
 Solar Eclipse for Everyone, A, 5:72
 Star-Hop from the Beehive, A, 3:44
 Table at the Telescope, A, 4:47
 see also *Sinnott, Roger W.*
Magee, Robert J., A Short Newtonian with a Spherical Mirror, 6:90
Marcialis, Robert, and *Richard Hill*, letter, 5:8
Mateo, Mario, Searching for Dark Matter, 1:20
Meeus, Jean, letter, 4:9
Mins, Forrest M., III, Project Halo: Measuring the 1994 Annular Solar Eclipse, 1:102
Mosley, John E., software review, 1:59, 2:60, 3:58, 4:59, 5:56, 6:58
 Software Update, 4:58, 5:59
Mullaney, James, Making the Photon Connection, 6:6
Mumford, George S., letter, 1:8
Naugle, Gerald E., letter, 2:8
Neely, A. William, letter, 3:9
Nozette, Stewart, and *Eugene M. Shoemaker*, Clementine Goes Exploring, 4:38
Oesper, David A., letter, 3:8
Olson, Donald W., and *Russell L. Doescher*, D-Day: June 6, 1944, 6:84
O'Meara, Stephen James, Bad Lighting Battled in New England, 4:99
 "Diamond-Ring" Lunar Eclipse, A, 3:26
 Making Sense of November's Perplexing Lunar Eclipse, 6:103
 New Era for Central American Astronomy, A, 5:99
 Three Noted Amateurs Will Be Missed, 4:103
Ortega, Tony, letter, 3:8

Ouellette, Gerald, A., Satellites for March and April, 4:74
Parkyn, Bill, Supersense: The Sidereal Eye, 6:30
Pendleton, Yvonne J., and **Dale P. Cruikshank**, Life from the Stars? 3:36
Pittendreigh, W. Maynard, Jr., Pittendreigh's Law of Planetary Motion, 2:6
Polakis, Tom, Hunting Down Abell Planetary, 5:106
Porretta, George F., M.D., letter, 5:9
Potenger, Mark, letter, 6:8
Rachal, Darian, letter, 3:8
Ramsley, Kenneth R., Knife-edge Testing with a Video Camera, 4:92
Read, George, letter, 4:8
Rendtel, Jürgen, see **Brown, Peter**
Ressmeyer, Roger H., Robert Q. Fugate: Starfire's Magician Optician, 5:20
 Rocket for the 21st Century, A, 2:36
Rickard, Brian S., letter, 2:8
Root, Nile, A Prehistoric Sun-Watching Station, 3:96

R. T. F. see **Fienberg, Richard Tresch**
R. W. S. see **Sinnott, Roger W.**
Schauf, Fred, Stars & Planets, 1:74, 2:68, 3:68, 4:68, 5:68, 6:68
Schaefer, Bradley E., Great Escape and the Moon, The, 4:86
 Solar Eclipses That Changed the World, 5:36
 World War II and the Moon, 4:87
Schilling, Govert, Eise Eisinga's Novel Planetarium, 2:28
Schuler, Paul W., III, A Radio Map of the Milky Way, 3:91
Shoemaker, Eugene M., see **Nozette, Stewart**
Shore, Steven N., and **Summer Starrfield**, A Nova for the Holidays, 4:42
 see also **Starrfield, Summer**
Simon, Bill, letter, 6:8
Sinnott, Roger W., Optimum Camera for Meteors, The, 2:85
Sinnott's Slant, 1:53, 2:57, 3:54, 5:53, 6:53

Sinnott, Roger W., and **Alan M. MacRobert**, Sky Gazer's Almanac 1994, 1:65
S. J. O. see **O'Meara, Stephen James**
Smith, Stephen B., letter, 2:9
Starrfield, Summer, and **Steven N. Shore**, Nova Cygni 1992: Nova of the Century, 2:20
 see also **Shore, Steven N.**
Stalet, Tom, Textbook Insanity, 1:6
Strecker, David Shalom, letter, 2:8
Thurmes, Peter M., see **Humphreys, Roberta M.**
Toutonghi, John P., letter, 4:8
Trimble, Virginia, book review, 2:61
Trombino, Donald F., S&T Test Report: The Baader Prominence Coronagraph, 6:51
Weissman, Paul, letter, 1:8, 4:8
Wild, Walter J., and **Robert Q. Fugate**, Untwinkling the Stars -- Part II, 6:20
 see also **Fugate, Robert Q.**
Wolf, Chris, letter, 2:8

Departments and Features

Amateur Astronomers —

Ascension Island Astronomy, 2:99
 Bad Lighting Battled in New England, 4:99
 Calendar of Events, 2:102, 6:100
 European News, 6:99
 New Era for Central American Astronomy, A, 5:99
 Prehistoric Sun-Watching Station, A, 3:96
 Project Halos: Measuring the 1994 Annular Solar Eclipse, 1:102
 Selling Astronomy to the Great American Public, 6:96
 Star Trails, 1:105, 2:101, 3:100, 4:101, 5:102, 6:98
 Three Noted Amateurs Will Be Missed, 4:103
 Tips on Writing a Newspaper Column, 6:97

Astronomical Computing —

Astrocomputing: 15 Years and Counting, 1:89
 Browsing Computer Bulletin Boards, 3:84
 D-Day: June 6, 1944, 6:84
 Great Escape and the Moon, The, 4:86
 Number of Stars Visible, The, 5:86
 Optimum Camera for Meteors, The, 2:85
 World War II and the Moon, 4:87

Backyard Astronomy —

Beginner's Book List, 2:50
 How to Start Right, 2:48
 Mastering the Virgo Cluster, 5:42
 Modern Astronomer's Red Light, The, 4:49
 Star-Hop from the Beehive, A, 3:44
 Table at the Telescope, A, 4:47

Books & Beyond —

Black Holes and Baby Universes and Other Essays, Stephen Hawking, 4:56
 Brief History of Time, A, Errol Morris, 4:56
 Briefly Noted, 1:60, 2:62, 3:61, 4:60, 5:60, 6:59
 Cambridge Eclipse Photography Guide, The, Michael A. Covington and Jay M. Pasachoff, 4:57
 Collecting the Space Race, Stuart Schneider, 1:60
 Cosmology books, 1:58
 Dream Machines, The: An Illustrated History of the Spaceship in Art, Science and Literature, Ron Miller, 6:61
 Electronic Picturebooks, Special Studies Office, 3:58
 Encyclopedia of Cosmology, Norriss S. Hetherington, 1:57
 Grand Tour, The: A Traveler's Guide to the Solar System, The Revised Edition, Ron Miller and William K. Hartmann, 4:60
 Guide, Project Pluto, 1:59
 Light at the Edge of the Universe, The, Michael D. Lemonick, 3:60
 Man Who Sold the Milky Way, The: A Biography of Bart Bok, David H. Levy, 5:58
 Newton's Clock: Chaos in the Solar System, Ivars Peterson, 3:59
 Redshift, Maris Multimedia Ltd., 2:60
 Small Blue Planet, Now What Software, 5:56
 Software Update, 4:58, 5:59
 Star-Hopping for Backyard Astronomers, Alan M. MacRobert, 5:57
 Star Probe, Frank Granshaw, 6:58
 Through a Universe Darkly, Marcia Bartusiak, 2:61
 View of the Universe, A, David Malin, 6:56
 Visit to a Small Universe, Virginia Trimble, 2:59

Where in Space Is Carmen Sandiego? Bröderbund Software, Inc., 4:59

Celestial Calendar —

Asteroids at the Swan, 6:78
 Beta Lyrae Revisited, 6:72
 Calendar Notes, 1:83, 2:77, 3:78, 4:78, 5:80, 6:77
 Finding Uranus, Neptune, and Pluto, 4:77
 Four Asteroid Appulses, 3:75
 Hind's Crimson Star Nears Maximum, 3:72
 Jewels in Lynx, 4:72
 Jupiter's Satellites, 1:85, 2:76, 3:77, 4:76, 5:79, 6:75
 Lactitia and R Leonis, 3:76
 Lunar Occultation Highlights for 1994, 1:80
 May 10th Annular Solar Eclipse, The, 1:78
 May 24th Partial Lunar Eclipse, The, 5:77
 Plancius to Pass M95 and M96, 2:77
 Planetary Occultations for 1994, 2:72
 Satellites for March and April, 4:74
 Solar Eclipse for Everyone, A, 3:72

Evening Sky, The, 1:72, 2:66, 3:66, 4:66, 5:66, 6:66

50 & 25 Years Ago, 1:9, 29, 39, 49, 59, 6:8

Focal Point —

Making the Photon Connection, 6:6
 Pittendreigh's Law of Planetary Motion, 2:6
 Space Art and the Big Picture, 3:6

Textbook Insanity, 1:6

Through the Media, Darkly, 5:6

Where Are the Ambassadors? 4:6

Images, 2:32, 3:32

Letters, 1:8, 2:8, 3:8, 4:8, 5:8, 6:8

New Product Showcase, 1:47, 2:52, 3:49, 4:53, 5:49, 6:47

News Notes —

Algol Resolved . . . Almost, 2:14
 Buying a Piece of the (Lunar) Rock, 4:15
 Case of the Flickering Galaxy, The, 6:14
 Caught in the Act, 4:14
 Celestial Records Struck in Gold, 1:13
 Chicxulub Crater, The: An Even Bigger Blast? 1:12
 Comets' Methanol Surprise, 5:15
 Cool Layer in the Solar Chromosphere, 6:12
 Dating the Manson Crater: No Link to Chicxulub, 1:12
 Deepening Mystery of Cosmic-Ray Origins, The, 5:12
 Dim Giants and Blazing Dwarfs, 2:12
 Don't Blame Solar Flares, 6:12
 Early Mars, 3:14
 Earth's Cosmic Dusting, 3:13
 Fate of the Sun, The, 5:12
 From the Ashes of SETI, 5:12
 Halley Halfway Out, 6:16
 Helping Telescopes Beat the Heat, 1:14
 Herschel's "Nebulous Doubles" Revisited, 6:15
 How Stable Is Earth's Climate? 1:14
 Introducing Gray Holes, 1:15
 Io's Electric "Ghost," 4:12
 Is the Sun a Typical Star? 4:15
 Martian Meteorite Unmasked, 6:14
 Mercury's Thin Skin and Inner Warmth, 2:13
 Mission Update, 1:16, 2:16, 3:16, 4:16, 5:16, 6:16
 Mystery Molecules Revealed, 6:13
 Name That Distance, 5:13
 No More Light-Years? 3:15

Not-So-Shocking Story of Orion's Bar, The, 4:13

Pluto and Charon Weigh In — Part II, 5:15

Pluto's Strange Orbit, 5:14

Polaris Becoming Constant, 2:15

Progress on Mount Graham, 3:12

Really Big Telescope, A, 4:14

Resolving a Quasar's Jet, 3:12

Short-lived SETI, 3:14

Soft Gamma-Ray Repeater Identified, 4:12

Supernova Plumes Spread the Elements, 6:12

U. S. and Russia Forge New Space Pacts, 2:12

Vanishing "Nucleon Stars," 2:15

View Through Radio Eyes, A, 6:15

Where Are the Interstellar Comets? 1:15

WIYN Telescope Takes Shape, 2:13

Observer's Page —

Cometary Prospects for 1994, 1:109

Deep-Sky Wonders, 1:111, 2:108, 3:109, 4:109, 5:108, 6:107

Forecasting a Lunar Eclipse, 6:106

Gallery, 1:116, 2:112, 3:112, 5:112, 6:109

How Faint Can You See? 4:106

Hunting Down Abell Planetary, 5:106

Making Sense of November's Perplexing Lunar Eclipse, 6:103

Observer's Guide to Galaxies — II, An, 3:103

Observer's Notebook, 1:114, 2:110, 4:111, 5:110

Sky Testing ScotchChrome 800/3200P Film, 2:106

Solar-Activity Update, 2:111, 3:110, 4:112, 5:111, 6:108

Sunspot Numbers, 1:114, 2:111

Rambling Through the Skies —

Brandenburg Scepter and the Georgian Harp, The, 1:70

Celestial Reptiles, 4:64

Queen of the May, 5:64

Rabbit Tracks, 6:64

Shadowing the Groundhogs, 2:64

Springtime for Cadillacs, 3:64

S&T Newswire —

Antarctic Astronomy, 4:10

Bright Nova in Cassiopeia, 2:10

Capella Resolved, 5:11

Castilia Revealed, 5:11

Chiron Occultation Observed, 2:11

Clementine Views the Moon, 5:10

Dark Matter, More or Less, 3:11

Distant Gamma-Ray Bursts, 4:10

Earth's Solar Ring, 1:11

Fifth-Dimension Fireballs, 3:10

Gemini Mirrors Chosen, 3:10

Hubble's Service Call, 2:10

Jupiter's Warm Glow, 5:11

Life on Earth? 1:10

Lost Comet Found, 1:10

Merging Galaxies and Bright Arcs, 1:11

Moon over Ida, A, 6:10

More Dark Objects Found? 2:11

November's Lunar Eclipse, 2:10

Pulsar's Planets Confirmed, 5:10

Reddest Objects Ever, 5:10

Refurbished Hubble Takes Aim at Comet Shoemaker-Levy 9, 4:10

Satellites Detect Record Meteor, 6:11
 Southern Slice of the Universe, A, 6:11
 Starburst Ring, A, 3:10
 Supernova in M51, 6:10
 Timing the Crash, 2:11
 Walter Scott Houston, 1912-93, 3:11
 X-ray Transit of Mercury, 1:10

S&T Test Report —
 Adorama's Dual-Purpose Telephoto Lens, 2:55
 Baader Prominence Coronagraph, The, 6:51
 Color Chemistry from Japan and a Red-Hot Film from Kodak, 1:51
 Kendrick Dew Remover System, The, 5:51

Sinnott's Slant, I:53, 2:57, 3:54, 5:53, 6:53
 Smooth Focusing with JMT's NGF, 3:52

Stars & Planets —
 Levels of the Heavens, 2:68
 Light-Pollution Notes: Naming the Beast, 6:71
 Light-Pollution Notes: Role of Air Pollution, The, 4:71
 Light-Pollution Notes: Year of Awakening, A, 2:71
 Moon, The, I:77, 2:71, 3:71, 4:71, 5:71, 6:71
 Near Sky, The: Ice Plates and Pencils, I:77
 Near Sky, The: Moon Pillars, 3:71
 Near Sky, The: Sulfate Haze, 5:71
 1994 Planet Preview, I:75
 Sky at the Arcturus Hour, The, 6:68

Sky at the Gemini Hour, The, 3:68
 Sky at the Leo Hour, The, 4:68
 Sky at the Spica Hour, The, 5:68
 Sun and Planets, The, I:76, 2:70, 3:70, 4:70, 5:70, 6:70
 Taurus High in the Icy Night, 1:74

Telescope Making —
 Build Your Own Interferometer, I:94
 Flexure of a Serrurier Truss, 2:91
 Knife-edge Testing with a Video Camera, 4:92
 Radio Map of the Milky Way, A, 3:91
 Short Newtonian with a Spherical Mirror, A, 6:90
 "Think Dob" but Build Equatorial, 5:92

Selected Topics and Celestial Objects

This listing is not intended to be exhaustive and does not supplant the other parts of the index. For example, material in such regular features as Books & Beyond is ordinarily indexed only under the Departments and Features section.

Amateur activities: astronomy-related computer bulletin-board systems, 3:84; bad attitudes in clubs, 5:8; becoming involved in schools, 6:98; bringing astronomy to the public, 6:96; CCDs replacing photography, 4:6; in Central America, 5:99; how to get started in astronomy, 2:48; International Union of Amateur Astronomers, 6:99; in Italy, 6:99; measuring the 1994 solar annular eclipse, I:102; meteor shower observing, 4:111; perception of the passage of time, 2:6; portable observing tables, 4:47; radio map of Milky Way, 3:91; tips for observing in cold weather, 2:9; visit to David Gill's encampment on Ascension Island, 2:99; Webb Society, 6:99; writing an astronomy newspaper column, 6:97

Archaeoastronomy: alignment of Egyptian pyramids, 3:64; Signal Hill site in Arizona, 3:96

Art: space art and public perceptions of astronomy, 3:6
Asteroids (minor planets): 111, Ate, 3:75; 4769 Castalia, 5:11; 2060 Chiron, 2:11; 511 Davida, 4:80; 6:78; 1806 Deric, 3:75; disks resolved, 3:10; 1620 Geographos, 4:38; 211 Isolda, 6:77; 39 Laetitia, 3:76; 125 Liberatrix, 6:78; 1092 Lilium, 3:75; 141 Lumen, 6:77; 56 Melete, 3:78; 18 Melpomene, 5:80; 2309 Mr. Spock, 4:101; named for pets, 4:101; 192 Nausikaa, 2:77; 401 Otilia, 6:77; 415 Palatia, 3:75; 482 Petrina, 4:101; 1096 Plancnia, 2:77; radar image of, 5:11; 483 Seppina, 4:101; 4257 Ubasti, 4:102

Astronomical constants: Hubble parameter, I:8

Astronomy and society: influence of space art, 3:6; women and, 5:6

Atlases and catalogs: digitized Palomar Sky Survey, 5:32

Atmospheric phenomena: fogbows, 5:110; glories, 5:110; green and blue flashes, 2:110; Moon pillars, 3:71; Sun pillars, 1:77; volcanic effects on lunar eclipses, 6:106

Bioastronomy: origin of life, 3:36; SETI funding, 3:14; 5:12

Calendars: Candlemas and Groundhog Day, 2:64; May Day, 5:64

Collapsed objects: gray holes, 1:15; missing neutron stars, 2:15; nucleon stars, 2:15; planets orbiting pulsar, 5:10; pulsar as gamma-ray repeater, 4:12

Comets: Borrelly, I:110; Encke, I:110; Halley at 18.8 astronomical units, 6:16; interstellar, 1:15; Kuiper Belt, 1:26, 30; 48, methanol in, 5:15; Mueller (1993a), I:109; Mueller (1993b), I:109; Schwassmann-Wachmann 2, I:110; Shoemaker-Levy 9, I:40; 2:11; 4:10; Spitzer recovered, 1:10; Tempel 1, I:110

Computing: astronomy-related computer bulletin-board systems, 3:84; camera's efficiency for catching meteors, 2:85; digitized Palomar Sky Survey, 5:32; Moon's visibility during World War II events, 4:86; past and future of astronomical computing, 1:89; stars visible with naked eye, 5:86; tide during D-day, 6:84

Constellation study: Brandenburg Scopet and Georgian Harp, 1:70; Chamaeleon, 4:65; Draco, 4:64; Hydra, 4:64; Hydrus, 4:65; Lacerta, 4:65; Navajo constellations, 6:64; Rabbit Tracks, 6:64; reptilian, 4:64; Scorpius, 6:64; Stellio, the Newt, 4:65

Cosmic rays: most powerful detected, 5:12; origin of, 5:12

Cosmology: Big Bang Challenge, 3:20; 6:8; recent books on, 1:57

Dark matter: in clusters of galaxies, 3:11; implied by quasar brightnesses, 3:9; Kaluza-Klein soliton, 3:10; searches using microlensing, I:20; 2:11

Eclipses:

Lunar: November 28-29, 1993, total, 2:10; 3:26; 6:103; May 24, 1994, partial, 5:77; forecasting appearance of, 6:106

Solar: January 22, 632, annular, 5:36; June 16, 1806, total, 5:37; February 12, 1831, annular, 5:38; August 21, 1914, total, 5:38; May 29, 1919, total, 5:39; May 10, 1994, annular, 1:78, 102; 5:72

Education: amateur bringing astronomy to the public, 6:96; Astronomy-Related Teacher Inservice Training program, 6:98; poor astronomy textbooks, 1:6; 4:8

Galaxies: blue compact dwarfs, 2:12; large-scale distribution of, 6:11; low surface brightness, 2:12; most distant, 5:10; starburst ring in NGC 7552, 3:10

Active: NGC 5128, 5:108; NGC 6814, 6:14

Clusters of: dark matter in, 3:11; gravitational lensing in MS4040+0204, 1:11; Virgo, 5:42

Interacting: M51 and NGC 5195, 6:107; NGC 3718, 6:15

Local Group (see also *Milky Way*): IC342, 2:108

Milky Way: amateur's radio map of, 3:91

"Normal": IC 2171, 1:112; M58, 5:44; M59, 5:44; M60, 5:44; M63, 6:107; M65, 3:107; M81, 3:104; M82, 3:105; M83, 5:109; M84, 5:46; M86, 5:46; M87, 5:45; M88, 5:47; M89, 5:45; M90, 5:45; M91, 5:47; M95, 3:106; M96, 3:106; M101, 3:108; M108, 4:109; M105, 3:107; M108, 3:107; NGC 2283, 1:112; NGC 2292, 1:113; NGC 2293, 1:113; NGC 2295, 1:113; NGC 2403, 2:108; 3:103; NGC 2672, 3:45; NGC 2683, 3:104; NGC 2841, 3:104; NGC 2903, 3:47, 104; NGC 2976, 3:105; NGC 3077, 3:105; NGC 3079, 3:105; NGC 3115, 3:105; NGC 3190, 3:47; NGC 3193, 3:47; NGC 3226, 3:47; NGC 3227, 3:47; NGC 3301, 3:106; NGC 3384, 3:107; NGC 3628, 3:108; NGC 4038, 4:109; NGC 4387, 5:46; NGC 4388, 5:46; NGC 4425, 5:46; NGC 4429, 5:45; NGC 4435, 5:46; NGC 4438, 5:46; NGC 4440, 5:45; NGC 4450, 5:44; NGC 4451, 5:44; NGC 4452, 5:45; NGC 4453, 5:46; NGC 4459, 5:47; NGC 4461, 5:46; NGC 4473, 5:47; NGC 4474, 5:47; NGC 4476, 5:46; NGC 4477, 5:47; NGC 4478, 5:46; NGC 4503, 5:45; NGC 4528, 5:45; NGC 4564, 5:45; NGC 4567, 5:45; NGC 4568, 5:45; NGC 4606, 5:44; NGC 4638, 5:44; NGC 4647, 5:44; NGC 4660, 5:44; NGC 4694, 5:44; NGC 4754, 5:44; NGC 4762, 5:44; NGC 5253, 5:109

Gamma-ray astronomy: gamma-ray burster distances, 4:10; gamma-ray repeaters, 4:12

Gravitation: evidence for microlensing, I:22; gravitational lensing, I:11, 20

History: D-day landing, 6:84; Eise Eisinga's 19th-century planetarium, 2:28; David Gill's encampment on Ascension Island to observe 1877 Mars transit, 2:99; Harvard College Observatory and the McCarthy era, 2:41; lore of Candlemas and Groundhog Day, 2:64; of May Day celebrations, 5:64; significant solar eclipses, 5:36; supernova on ancient coin, I:13; Titanic Historical Society, 1:9; woman astronomers, 5:6; World War II "Great Escape," 4:86

Hubble Space Telescope: images taken with optical correction, 4:20; repair cost, 2:8; repair mission, 2:20; 4:20, 24; 6:16; resolves Comet Shoemaker-Levy 9, 4:10

Imaging:

Astrophotography: capturing meteors, 2:85; decline of, 4:6; HAC 3200 color-film developer, 1:51; Kodak underwater Ektachrome, 1:51; Scotch-Chrome 800/3200P, 2:106; tips for annular eclipse, 5:75

Charge-coupled devices (CCDs): replacing photography, 4:6

Image processing: overview of electronic techniques, 4:30

Infrared astronomy: in Antarctica, 4:10; image of Jupiter, 5:11; methanol in comets, 5:15

Interstellar matter: material spread by supernovae, 6:12

Light pollution: conference in New England, 4:99; dark-sky preserve in Michigan, 2:9; deed restriction in fight against, 2:9; role of air pollution, 4:71; 5:71

Meteorites: misidentification of, 6:14; new Martian identified, 6:14; quantifying cosmic dust, 3:13

Meteors: brightest detected, 6:11; curved fireball, 1:114; Geminids, 4:111; Leonids, 4:111; Lyrid shower, 4:78; Orionids, 4:111; Perseids for 1993, 1:34, 105; photographing, 2:85; satellite observations of large airbursts, 2:26; 6:11

Molecules: carbon-chain, 6:13; diffuse interstellar bands identified, 6:13; methanol in comets, 5:15; organic in solar system, 3:36

Moon: Clementine spacecraft survey of, 4:38; 5:10; Soviet lunar rock sample auctioned, 4:15; visibility during World War II events, 4:86

Nebulae:

Bright: M42, 4:13; M78, I:72; NGC 2024, I:72

Planetary: Abell 2, 5:107; Abell 7, 5:107; Abell 10, 5:107; Abell 12, 5:107; Abell 19, 5:107; Abell 21, 5:106; Abell 30, 5:106; Abell 31, 5:107; Abell 33, 5:107; Abell 35, 5:106; Abell 37, 5:107; as cosmic distance indicators, 5:13; M97, 6:108; NGC 2438, 3:109; NGC 3242, 6:108; NGC 4361, 4:109

Neutrino astronomy: in Antarctica, 4:10

Neutron stars: see *Collapsed objects*

Nova: evolution of, 2:20; Nova Cassiopeiae 1993, 2:10; 4:42; Nova Cygni 1992, I:114; 2:20

Observatories:

Professional: detecting heat sources in, 1:14; European Southern, 4:9; La Silla, 2:32; Maui Optical Station, 5:27; Mount Graham, 3:12; Starfire Optical Range, 5:20, 24

Observing techniques: improving your limiting magnitude, 4:106

Occulutions: by distant comets, I:26; star by 2060 Chiron, 2:11

On-line databases and communications (see also *Computing*): astronomy-related computer bulletin-board systems, 3:84; digitized Palomar Sky Survey, 6:32

Optics: adaptive technology declassified from military, 5:24; 6:20; knife-edge testing, 4:92; laser interferometer for testing, 1:94; rubber mirrors, 5:26; 6:23; spherical mirrors, 6:90

Organizations: International Dark-Sky Association,

499; International Union of Amateur Astronomers, 699; Webb Society, 699

People: Bok, B., 241; Cragg, T., 2:101; Einstein, A., 5:38; Eisinger, E., 2:28; Fugate, R. Q., 5:20; Gill, D., 2:99; Holmes, C. W., 3:100; Houston, W. S., 3:11; 5:102; Hoyle, F., 3:22; McCarthy, J., 2:41; Muhammad, 5:36; Porter, A., 3:9; Raden, D. J., 4:103; Reyes, D., 4:103; Shapley, H., 2:41; Smith, A. P., 4:103; Tecumseh, 5:36; Turner, N., 5:38

Planetary: Eise Eisinger's 19th-century model solar system, 2:28

Planets and their satellites:

Earth (see also *Moon*): cause of geomagnetic storms, 6:12; Chicxulub impact crater, 1:12; climate stability, 1:14; cosmic dust accumulation, 3:13; detection of life by Galileo, 1:10; development of life, 3:36; dust ring around orbit, 1:11; investigation of Tunguska explosion, 6:38; Manson impact crater, 1:12

Extrasolar: in interstellar space, 1:26; orbiting pulsar, 5:10

Jupiter: chain of impact craters on Callisto, 1:41; and collision with Comet Shoemaker-Levy 9, 1:40; 2:11; infrared image of 5:11; Io's flux tube, 4:12

Mars: new meteorite from identified, 6:14; "wet" early climate, 3:14

Mercury: "hot poles," 2:14; microwave emission from surface, 2:13; transit on November 6, 1993, 1:10

Neptune: finder chart, 4:77

Pluto: explanation for unusual orbit, 5:14; finder chart, 4:78; sizes of Charon and, 5:15

Uranus: finder chart, 4:77

Pulsars: see *Collapsed objects*

Quasars: brightenings caused by microlensing? 2:11; jet of 3C273 resolved, 3:12; "magnified," 3:9

Radar astronomy: image of asteroid Castalia, 5:11

Radio astronomy: amateur's map of Milky Way, 3:91; Very Large Array radio sky survey, 6:15

Relativity: proof during 1919 solar eclipse, 5:39

Science policy: distance measurement standards, 3:15; funding for scientific satellites, 5:8; NASA's SETI funding, 3:14; 5:12

Solar system: fate of with post-main-sequence Sun, 5:12; Kuiper Belt comets, 1:26; 4:8; organics in, 3:36

Spacecraft (see also *Hubble Space Telescope*): Advanced Satellite for Cosmology and Astrophysics, 2:16; 3:16; Advanced X-ray Astrophysics Facility, 2:16; 6:16; Array of Low-Energy X-ray Imaging Sensors (ALEXIS), 5:16; Clementine, 3:16; 4:38; Compton Gamma Ray Observatory, 1:16; 3:16; 4:10; Cosmic Background Explorer, 3:16; Delta Clipper Experimental (DC-X), 2:36; Far Infrared Space Observatory, 4:16; International Ultraviolet Explorer, 2:20; 5:8; Korona I, 6:16; Long Duration Exposure Facility, 3:13; Magellan, 6:16; Mars Environmental Survey (MESUR), 5:16; Mars 94, 2:16; Mars Observer, 1:16; 4:16; Mars Surveyor, 5:16; Near Earth Asteroid Rendezvous, 4:16; Orbiting Retrievable Far and Extreme Ultraviolet Spectrograph (ORFEUS), 1:16; Rosat, 3:16; 5:16; Rosetta, 2:16; Small Explorer, 1:16; Upper Atmosphere Research Satellite, 4:74; Voyager 2, 1:43

Space policy: U.S.-Russian pact, 2:12

Star clusters:

Globular: Omega Centauri, 5:108

Open: M36, 2:66; M37, 2:66; M38, 2:66; M41, 1:16; M44 (Beehive), 3:44; 4:66; M46, 3:66; 109; M47, 3:66; 109; M67, 4:66; Melotte 111 (Coma Berenices), 5:66; NGC 1502, 2:109; NGC 1981, 1:72; Tombaugh 1, 1:113; Tombaugh 2, 1:113; Trapezium, 2:110

Stars: calculating number of stars visible with naked eye, 5:86; intermediate-mass, 4:14; seeing in daylight, 2:110

Double and multiple: Epsilon Bootis, 6:68; Xi Bootis, 6:68; Capella, 4:11; Beta Capricorni, 1:82; HJ2574, 6:15; Gamma Leonis, 3:47; Zeta Leonis, 3:47; Iota Librae, 1:82; 12 Lyncis, 4:72; 19 Lyncis, 4:72; 20 Lyncis, 4:73; 64 Orionis, 1:82; Beta Scorpii, 1:82; Σ946, 4:73; Σ960, 4:73; Σ968, 4:73; Σ1009, 4:73; Σ1025, 4:73; Σ1033, 4:73; Σ1050, 4:73; Struve 484, 2:109; Struve 485, 2:109; Struve 747, 1:72; Struve 958, 4:73; Struve 1689, 5:44; 106 Tauri, 1:82; Xi and Omicron Tauri, 1:75; Chi Virginis, 1:82; Gamma Virginis, 4:9

Individual: Epsilon Virginis, 5:42

Variable: Algol, 2:14; SZ Camelopardalis, 2:109;

T Cancri, 3:46; X Cancri, 3:46; R Coronae Borealis, 6:66; S Coronae Borealis, 6:66; U Coronae Borealis, 6:66; R Leonis, 3:76; R Leporis, 3:72; Beta Lyrae, 6:72; Theta Orionis A, 1:83; Polaris, 2:15; Lambda Tauri, 1:75

Sun: cause of geomagnetic storms, 6:12; chemical makeup of, 4:15; cool layer in chromosphere, 6:12; coronal mass ejections, 6:12; post-main-sequence evolution, 5:12

Supernovae: asymmetric explosions spread elements, 6:12; collapsed cores of Type II explosions, 2:15; SN 1987A, 2:15

Telescope making: assembling an LED lamp, 4:49; building a laser interferometer for testing optics, 1:94; Crayford eyepiece mounting, 3:54; Dobsonian-style features used for equatorial mounting, 5:92; filter strip holder, 1:9; flexure of a truss-type telescope tube, 2:91; knife-edge testing, 4:92; Newtonian with spherical mirror, 6:90; portable observing tables, 4:47

Telescopes:

Amateur: Roy Diffrient's 18-inch reflector, 2:91; Scott Jamieson's 8-inch reflector, 5:92; Robert Magee's 6-inch Newtonian with spherical primary, 6:90; Paul Schuler's 12-foot radio telescope, 3:91

Professional: Antarctic Muon and Neutrino Detector Array (AMANDA), 4:10; Fly's Eye array, 5:12; Gemini Project (twin 8-meter), 3:10; McMath Solar Telescope (1.5-meter), 3:32; Scandinavian 25-meter, 4:14; South Pole Infrared Explorer, 4:10; Submillimeter Telescope (10-meter), 3:12; Vatican Advanced Technology Telescope (1.8-meter), 3:12; WIYN (3.5-meter), 2:13

Timekeeping: delta-T for 1994, 1:84

Ultraviolet astronomy: nova evolution, 2:20; 4:42

Very large-scale structure: southern galaxy survey, 6:11

Vision: enhancing with bioengineering, 6:30; limiting magnitude, 4:106; seeing stars in daylight, 2:110; "Sidereal Eye," 6:30

X-ray astronomy: dark matter in clusters of galaxies, 3:11; variability of NGC 6814 linked to star, 6:14; view of November 6, 1993, transit of Mercury, 1:10



ORIGINALS PRINTS POSTERS
GREETING & HOLIDAY CARDS

Robert McCall Kim Poor Alan Bean
Michael Carroll Don Davis Joe Tucciarone
Bob Eggleton John Foster & more
prompt shipping framing available

RARE & VALUABLE AUTOGRAPHS
We have astronaut & cosmonaut autographed collector's editions, with signatures of the original Mercury astronauts, the Apollo-Soyuz crews, and prints by astronaut-artists Alan Bean and Alexei Leonov.

Send \$3 to receive our latest catalog,
updates, and newest releases

\$4 Canada, \$5 International airmail U.S. funds only
NOVAGRAPHICS CATALOG #11
BOX 37197-Z TUCSON, AZ 85740
charge it on your credit card
1-800-727-NOVA

New! Perfect for stargazing
on cool evenings

The Sky & Telescope Sweatshirt

Our distinctive logo on
a black sweatshirt.
Heavy and durable, this
preshrunk shirt is 90%
cotton, 10% polyester.

Available in adult sizes medium
(SW01M), large (SW01L), and
extra large (SW01X).

Toll Free 800-253-0245
(Outside U.S. and Canada
call 617-854-7360) 8:30
a.m. to 5:00 p.m.
Eastern Time, Monday
through Friday

Have your VISA or
MasterCard
ready.
Or use the order form bound in this issue.

\$24.95

SKY & TELESCOPE
The Essential Magazine of Astronomy

SKY PUBLISHING CORPORATION
P.O. Box 9111, Belmont, MA 02178-9111
Fax 617-864-6117

Index to Volume 88

July–December 1994

Titles

Absolute Magnitudes of Stars, The. *Alan Hirshfeld*, 3:35
 Another Route to Sharp Images. *T. Stewart McKechnie*, 2:36
 Awaiting the Crash — Part II. *J. Kelly Beatty* and *David H. Levy*, 1:18
 Catalog of Quasars Near and Far. *A. Geoffrey Burbridge* and *Adelaide Hewitt*, 6:32
 Clementine Maps the Moon. *Stuart J. Goldman*, 2:20
 Dark Matter and the Origin of Cosmic Structure. *David N. Schramm*, 4:28
 Eclipse Photography Goes Digital. *Dennis di Cicco*, 5:18
 Exploring the Orion Nebula. *C. Robert O'Dell*, 6:20

Flight Through the Aurora. *A. Jay Apt*, 4:36
 Future Astronomers of Europe. *Richard M. West*, 3:28
 Great Crash of 1994, The: A First Report. *J. Kelly Beatty* and *Stuart J. Goldman*, 4:18
 Great Dark Spots of Jupiter. The. *Stephen James O'Meara*, 5:30
 Ice Fishing for Neutrinos. *Leif J. Robinson*, 1:44
 Mystery That Won't Go Away, The. *Charles Meegan*, 2:28
 Observing a Partly Cloudy Universe. *Stuart Bowyer*, *Roger Malina*, and *Bernhard Haisch*, 6:36
 Putting a Shine on Palomar. *Roger H. Ressmeyer*, 6:26
 Remote Astronomy: Bringing Mount Wilson to You. *Martin Ratcliffe*, 1:38

Ring of Fire. *Stephen James O'Meara*, 2:40
 S&T Test Report: Juno 12.5 Equatorial Telescope. *The. Alan MacRobert*, 2:49
 S&T Test Report: Kodak Ektachrome P1600 film. *Johnny Horne*, 3:48
 S&T Test Report: Meade and Orion 10-inch Dobsonians. *George East*, 4:45
 Science with the Keck Telescope. *Kevin Krisciunas*, 3:20
 Shape of the Solar Corona. The. *Syun-Ichi Akasofu*, 5:24
 Subaru Mirror on the Move. *Roger W. Sinnott*, 5:38
 Visual Impact! *Stuart J. Goldman*, 1:24

Authors

Adair, John E., The Ultraviolet Sundial, 1:94
Akasofu, Syun-Ichi, The Shape of the Solar Corona, 5:24
A. M. see *MacRobert, Alan M.*
Anderson, Jay, see *Espenak, Fred*
Apt, Jay, A Flight Through the Aurora, 4:36
Avila, Charles F., A Precision Sundial of Bronze, 6:88
Baldock, Chris, letter, 4:8
Batinson, John, letter, 2:11
Beatty, J. Kelly, Instant Science on the Internet, 4:21
Beatty, J. Kelly, and *David H. Levy*, Awaiting the Crash — Part II, 1:18
Beatty, J. Kelly, and *Stuart J. Goldman*, The Great Crash of 1994: A First Report, 4:18
Beech, Martin, A Perseid Clustering Project, 2:74
Beish, Jeffrey, Which Side Is Visible? 6:75
 Your Guide to Mars in 1994–95, 6:72
Bell, Jim, letter, 1:8
Betz, John A., letter, 1:8
Binzel, Richard P., letter, 5:8
Bird, Michael J., Circles in the Sky, 6:100
 Observer's Notebook, 5:101
Bortle, John E., Comet Digest, 3:101
Bowyer, Stuart, *Roger Malina*, and *Bernhard Haisch*, Observing a Partly Cloudy Universe, 6:36
Bradbury, Mark A., letter, 2:11
Brown, Peter, Another Good Perseid Show? 2:72
Browning, James A., letter, 4:9
Burbridge, Geoffrey, and *Adelaide Hewitt*, A Catalog of Quasars Near and Far, 6:32
Carlson, James C., letter, 5:8
Carter, Leonard J., book review, 2:58
Chaikin, Andrew, Apollo's Giant Leap for Science, 1:6
Chambers, John E., see *Green, Daniel W. E.*
Chapman, Clark R., Galileo's Box Seat, 1:23
 Observing Jupiter at Impact Time, 1:31
Cicchetti, Paul, Drawing Lunar Features, 5:91
Clark, Roger N., The Veil Nebula, 4:104
Coleman, David L., A Personal "Martian Chronicle," 6:94
di Cicco, Dennis, Eclipse Photography Goes Digital, 5:18
Doescher, Russell L., see *Olson, Donald W.*
East, George, S&T Test Report: Meade and Orion 10-inch Dobsonians, 4:45
Emerson, Gary, letter, 2:10
Espenak, Fred, and *Jay Anderson*, letter, 6:8
Fienberg, Richard Tresch, book review, 1:60, 3:53
Fletcher, Bill, Negatives, Pixels, and Astrophotography, 5:98
Foster, Caxton C., Chaos in the Orbit of "Jack," 3:78
Gahlinger, Paul M., Astronomy at the Cape, 3:92
Gibson, Ursula and James, letter, 1:9
Goldman, Stuart J., Clementine Maps the Moon, 2:20

Visual Impact! 1:24
 see also *Beatty, J. Kelly*
Green, Daniel W. E., *John E. Chambers*, and *Gareth V. Williams*, Is Pluto a Major Planet? 2:6
Gurshtein, Alex A., book review, 6:54
Haas, Sissy, Double Gems in Pisces, 5:68
Haisch, Bernhard, see *Bowyer, Stuart*
Hardy, John W., letter, 3:8
Harrington, Philip, Binocular Highlights, 1:70, 2:66, 3:62, 4:66, 5:62, 6:66
 Observer's Guide to Galaxies — III, An, 1:114
Hendricks, Edson C., letter, 3:8
Heyn, Herman M., How to See Stars in the Daytime, 3:99
Hirshfeld, Alan, The Absolute Magnitudes of Stars, 3:35
Horne, Johnny, S&T Test Report: Kodak Ektachrome P1600 film, 3:48
Hossfield, Casper, letter, 5:8
Houston, Walter Scott, Deep-Sky Wonders, 1:116
Howard, Robert F., book review, 5:52
Hudson, Daniel, Astronomy and the Arrow of Time, 6:6
Hughes, David W., book review, 4:57
Ince, Martin, letter, 4:8
Isles, John E., R Aquarii and Its Elusive Nebula, 4:74
J. K. B. see *Beatty, J. Kelly*
Jones, Robert A., letter, 1:8
Kandefler, Pete, letter, 6:8
Kniffen, Doug, Design Example: My Dome, 4:93
 Geodesic Domes for Amateur Observers, 4:90
Kramer, Jack, In Praise of Star-Hopping, 5:6
Krisciunas, Kevin, Science with the Keck Telescope, 3:20
Krupp, E. C., Rambling Through the Skies, 1:68, 2:64, 3:60, 4:63, 5:60, 6:64
Lazerson, Howard E., Improved Blink Comparator, 1:100
Lefranc, Barry, letter, 3:8
Leonard, Jim, letter, 5:8
Levy, David H., Is Pluto a Major Planet? 2:6
 Star Trails, 1:11, 2:99, 3:95, 4:100, 5:95, 6:97
 Where to Report, 1:35
 see also *Beatty, J. Kelly*
Likert, Gary, letter, 1:9
L. J. R. see Robinson, Leif J.
Lombard, Catherine A., Love Letter to an Astronomer, 3:6
Lyster, Timothy, International News, 5:93
MacDougall, Glenn, letter, 3:8
McDowell, Jonathan, book review, 3:52
 Mission Update, 1:16, 2:18, 3:16, 4:16, 5:16, 6:16
McKechnie, T. Stewart, Another Route to Sharp Im- ages, 2:36
McKee, Katharine, Astronomy Goes Native, 1:107
MacRobert, Alan M., Amateur Astronomy's Greatest Week, 4:24
 Apollo 11 on the Moon, 1:80
 Asteroids in Sagittarius, 1:83
 Asteroids Near the Hyades, 5:72
 Backyard 2030, 2:45
 Cepheus Star-Hop, A, 3:40
 Close-up: The Double Cluster, 6:46
 Comet Borrelly This Fall and Winter, 6:76
 Geographos Speeds Close By, 2:75
 Moons of Uranus and Neptune, The, 3:71
 Penumbral Lunar Eclipse, A, 5:71
 Rille in the Alpine Valley, The, 4:72
 S&T Test Report: The Juno 12.5 Equatorial Telescope, 2:49
 South America's Eclipse of the Sun, 5:70
 Two Asteroids to Track, 3:73
Malin, David, images, 6:42
Malina, Roger, see *Bowyer, Stuart*
Mallama, Anthony, The Phase Anomaly of Venus, 2:102
Maor, Eli, Hayim Selig Slonimski, 3:93
Mariotti, David, letter, 4:8
Maris, Vic, letter, 1:8
Marsden, Brian G., letter, 6:9
Martys, Cedrick R., M.D., 2:10
Meegan, Charles, The Mystery That Won't Go Away, 2:28
Meisel, David D., book review, 5:54
Mims, Forrest M., III, Project Halo Update, 6:102
Morales, Ronald J., The NGC 7214 Galaxy Group, 4:106
Mosley, John E., software review, 2:60, 61, 3:55, 4:59, 6:57
 Software Update, 4:58
Murray, Jack, The Fred L. Whipple Observatory: An Amateur's Perspective, 2:96
Norton, O. Richard, Cave Optical Company, 2:88
Numazawa, Shigemi, Imaging the Sun's Corona by the SUM Method, 5:27
O'Dell, C. Robert, Exploring the Orion Nebula, 6:20
Olson, Donald W., and *Russell L. Doescher*, Dating Ansel Adams's Moon and Half Dome, 6:82
O'Meara, Stephen James, Dark Tales from Texas, 4:96
 Great Dark Spots of Jupiter, The, 5:30
 Great Eclipse Chase, A, 4:98
 Historical Perspective, A, 5:34
 Ring of Fire, 2:40
 Visual Discovery of Supernova 1994S, The, 4:99
Orton, Geoffrey D. C., letter, 4:9
Othman, Hans, A Glow-in-the-Dark Planisphere, 5:84
Ouellette, Gerald A., Satellites for August and

September, 3:68
Pankertier, David W., letter, 5:9
Parker, Donald C., book review, 6:55
Parker, Samantha, A New Visitors Center at Lowell Observatory, 2:97
Ratcliffe, Martin, Remote Astronomy: Bringing Mount Wilson to You, 1:38
Ressmeyer, Roger H., Putting a Shine on Palomar, 6:26
Robinson, Don, letter, 4:8
Robinson, Leif J., AMANDA Is Not Alone in the Hunt, 1:47
Glimpsing the Cosmic Quilt, 4:34
Ice Fishing for Neutrinos, 1:44

R. W. S. see Sinnott, Roger W.
Sampson, Russ, Probing the Sun's Chromosphere, 5:76
Schaaf, Fred, Stars & Planets, 1:72, 2:68, 3:64, 4:68, 5:64, 6:68
Schramm, David N., Dark Matter and the Origin of Cosmic Structure, 4:28
Sinnott, Roger W., Just How Accurate Can a Sundial Be? 6:89
Optical Bench Talk, 5:86
Sinnott's Slant, 2:52, 3:50, 4:48
Solar-System Software to the Max, 1:92
Subaru Mirror on the Move, 5:38
Sunrise and Sunset: A Challenge, 2:84
Smith, David L., letter, 4:8

Stern, S. Alan, letter, 5:8
Taki Toshimi, Mirror Support: 3 or 9 Points? 3:84
Thibault, Patrick, Networks We Shall Become! 4:6
Tombaugh, Clyde W., letter, 6:8
Trull, Don, letter, 2:10
Turco, Ed, Video Deception? 1:103
Urbankiewicz, Les, letter, 1:9
Waff, Craig B., book review, 1:62
Wehner, Randall, letter, 2:11
West, Richard M., Future Astronomers of Europe, 3:28
Williams, Gareth V., see *Green, Daniel W. E.*
Zalcik, Mark, In Search of Noctilucent Clouds, 1:76
Zirin, Harold, letter, 5:9
Zwadio, Jim, A "Book of Hours" Decoded, 4:84

Departments and Features

Amateur Astronomers —

Astronomy at the Cape, 3:92
 Astronomy Goes Native, 1:107
 Calendar of Events, 1:112, 2:100, 3:97, 5:96
 Dark Tales from Texas, 4:96
 Drawing Lunar Features, 5:91
 Fred L. Whipple Observatory, The: An Amateur's Perspective, 2:96
 Great Eclipse Chase, A, 4:98
 Hayying Selig Slonimski, 3:93
 International News, 5:93
 New Visitors Center at Lowell Observatory, A, 2:97
 Personal "Marian Chronicle," A, 6:94
 Star Trails, 1:111, 2:99, 3:95, 4:100, 5:95, 6:97
 Visual Discovery of Supernova 1994S, The, 4:99

Astronomical Computing —

"Book of Hours" Decoded, A, 4:84
 Chaos in the Orbit of "Jack," 3:78
 Dating Ansel Adams's *Moon and Half Dome*, 6:82
 Probing the Sun's Chromosphere, 5:76
 Solar-System Software to the Max, 1:92
 Sunrise and Sunset: A Challenge, 2:84
 Ultraviolet Sundial, The, 1:94

Backyard Astronomy —

Amateur Astronomy's Greatest Week, 4:24
 Backyard 2030, 2:45
 Cepheus Star-Hop, A, 3:40
 Close-up: The Double Cluster, 6:46
 Finding the Central-Meridian Longitude, 1:33
 Observing Jupiter at Impact Time, 1:31
 Transit Timings, 1:32
 Where to Report, 1:35

Books & Beyond —

Astronomical Formulas, Martin V. Zombeck, 3:53
 Astronomical Pocket Diary 1995, Norbert Haley, 6:58
 Atlas of Neptune, Gary E. Hunt and Patrick Moore, 4:60
 Briefly Noted, 1:64, 2:62, 3:56, 4:60, 5:56, 6:59
 Cosmonautics: A Colorful History, Wayne R. Matson, 3:52
 Discovering the Secrets of the Sun, Rudolf Kippelhahn, 5:52
 Earth & Universe, Armagh Planetarium, 2:61
 Earth Centered Universe, The, David J. Lane, 3:55
 Explorers of Mars Hill, The: A Centennial History of Lowell Observatory, William Lowell Putnam, 1:62
 Hubble Wars, The, Eric J. Chaaison, 1:60
 Images of the Cosmos, Barrie W. Jones, Robert J. A. Lambourne, and David A. Rothery, 5:56
 Macrocoss, TellSoft, 6:57
 Making of a Soviet Scientist, The, Roald Z. Sagdeev, 6:54
 Man on the Moon, A. Andrew Chaikin, 2:58
 Mars Explorer, Virtual Reality Laboratories, Inc., 2:60
 Meteors, Neil Bone, 5:54
 On Top of the World, Exploration Software, 4:59
 Planet Observer's Handbook, The, Fred W. Price, 6:55
 Quest for Comets, The, David H. Levy, 4:57
 Software Update, 4:58

Celestial Calendar —

Another Good Perseid Show? 2:72
 Apollo 11 on the Moon, 1:80
 R Aquarii and Its Elusive Nebula, 4:74
 Asteroids in Sagittarius, 1:83

Asteroids Near the Hyades, 5:72
 Calendar Notes, 1:84, 2:77, 3:75, 4:77, 5:74, 6:79
 Comet Borrelly This Fall and Winter, 6:76
 Double Gems in Pisces, 5:68
 Geographos Speeds Close By, 2:75
 In Search of Noctilucent Clouds, 1:76
 Jupiter's Satellites, 1:82, 2:76, 3:74, 4:76, 6:77
 Moons of Uranus and Neptune, The, 3:71
 NLC Observing Tips, 1:77
 Penumbral Lunar Eclipse, A, 5:71
 Perseid Clustering Project, A, 2:74
 Rille in the Alpine Valley, The, 4:72
 Satellites for August and September, 3:68
 Saturn's Satellites, 1:79, 2:78, 3:70, 4:78, 5:73, 6:78
 South America's Eclipse of the Sun, 5:70
 Telrad Tip, 4:77
 Two Asteroids to Track, 3:73
 Which Side Is Visible? 6:75
 Your Guide to Mars in 1994–95, 6:72
Evening Sky, The, 1:70, 2:66, 3:62, 4:66, 5:62, 6:66
50 & 25 Years Ago, 1:9, 2:11, 3:8, 4:9, 5:9, 6:9
Focal Point —

Apollo's Giant Leap for Science, 1:6
 Astronomy and the Arrow of Time, 6:6
 In Praise of Star-Hopping, 5:6
 Is Pluto a Major Planet? 2:6
 Love Letter to an Astronomer, 3:6
 Networks We Shall Become! 4:6
Images, 1:56, 2:54, 4:40, 5:48, 6:42
Letters, 1:8, 2:10, 3:8, 4:8, 5:8, 6:8
New Product Showcase, 1:55, 2:56, 3:45, 4:53, 5:43, 6:51
News Notes —

Aluminizing the Early Solar System, 3:14
 Blowing Bubbles Around AG Carinae, 4:13
 Bursts, Flashes . . . Quasars? 6:12
 Closest Pulsar? 4:14
 Coma Cluster Swallowing Its Neighbors, 4:15
 Distant Water, 4:14
 Furious Stellar Wind, A, 5:13
 Gamma-Ray-Burst Mystery Deepens, 5:15
 Giant Telescopes Update, 3:13
 Hooker Telescope Reopens, 4:15
 Hot Time on Io, A, 3:15
 Hubble's Stellar Performance, 1:12
 Interstellar Heavyweights in the Milky Way, 5:14
 Iron Quasars, 1:14
 It Doesn't Get Any Bigger Than This, 6:14
 Kamikaze Asteroids, 6:15
 Meteorites 2, Cars 0, 6:12
 Milky Way's Hamburger Bun Halo, The, 5:15
 Milky Way's Nearest Neighbor, The, 2:14
 Mission Update, 1:16, 2:18, 3:16, 4:16, 5:16, 6:16
 More Galaxies Than We Knew, 2:15
 Most Distant Cluster of Galaxies, 4:12
 New Clue to Cosmic Density, A, 1:15
 New Piece of the Moon, A, 4:16
 New Recipe for Oddball Stars, A, 5:12
 New Slant on Vega, A, 6:13
 Not MACHOs After All? 6:13
 Open Universe After All? An, 3:12
 Powerhouse Photon, 5:15
 Ring Nebula Reality, 1:15
 Sighting the Crescent Moon, 1:14
 Ski Mercury! 4:12
 Stellar Interlopers in the Milky Way, 2:16
 Supernova That Almost Got Away, A, 2:17
 Third Moon-Crossing Asteroid, The, 1:13
 Tracking the Peekskill Meteorite Fall, 2:16

Tunguska's Smoking Gun? 6:14
 Two's Company, 4:14
 Using Planetary Nebulae to Weigh a Galaxy, 6:16
 VLBA Science, 1:13
 What Kind of Spiral Is M33? 6:14
 What's New in M81? 3:12
 Zooming In on Pluto and Charon, 5:14
Observer's Page —

Circles in the Sky, 6:100
 Comet Digest, 3:101
 Deep-Sky Wonders, 1:116
 Gallery, 1:120, 2:108, 3:104, 4:110, 5:104, 6:104
 How to See Stars in the Daytime, 3:99
 Negatives, Pixels, and Astrophotography, 5:98
 NGC 7214 Galaxy Group, The, 4:106
 Observer's Guide to Galaxies — III, An, 1:114
 Observer's Notebook, 1:118, 2:104, 3:102, 4:108, 5:101
 Phase Anomaly of Venus, The, 2:102
 Project Halo Update, 6:102
 Solar Activity Update, 1:119, 2:106, 3:103, 4:109, 5:103, 6:103
 Veil Nebula, The, 4:104
 Venus-Moon Conjunction, 2:106
Rambling Through the Skies —

Crossing the Border, 5:60
 Dnoes, Navi, and Regor, 4:63
 Heart of Saturday Night, The, 3:60
 Loafing in August, 2:64
 Long Shadow of Winter, The, 6:64
 Silver Moon, 1:68
S&T Newswire —

Amino Acids in Space? 3:10
 Annular Eclipse Heralds Dedication of New 3.5-meter Telescope, 1:10
 Are Quasars Blue or Red? 5:10
 Comet Crash in Plain Sight, 5:11
 Comet-Crash Update, 2:12
 Comet Crossing, 1:10
 ESO's Very Large Gamble, 5:10
 Hidden Quasar in Arp 220, A? 4:10
 Hubble Telescope Spies Primordial Helium, 4:11
 Jumbo Omega Centauri, 2:12
 Keck Telescope Spies Primordial Deuterium, 1:11
 Meteorites Pound Canada, 3:11
 More Comets Break Up, 6:11
 New Neighbor for the Milky Way, A, 5:11
 New Summer Comet, A, 3:10
 1994 Perseid Shower, The: A First Report, 5:10
 Planet Around Beta Pictoris? A, 3:10
 Pluto's Distant Cousins, 1:10
 Protoplanetary Possibilities in the Trapezium, 4:10
 Saturn's New Spots, 6:11
 Supermassive Black Holes: The Smoking Gun, 2:13
 Supernova Surprise, 2:13
 Tidally Powered Star, A, 2:12

S&T Test Report —

Juno 12.5 Equatorial Telescope, The, 2:49
 Kodak Ektachrome P1600 film, 3:48
 Meade and Orion 10-inch Dobsonians, 4:45
 Sinnott's Slant, 2:52, 3:50, 4:48

Stars & Planets —

Arrival of Bright Winter Stars, The, 6:68
 Light-Pollution Notes: Getting Organized, 4:71
 Light-Pollution Notes: International Progress, 2:71
 Light-Pollution Notes: Many Ways to Act, 6:71
 Moon, The, 1:75, 2:71, 3:67, 4:71, 5:67, 6:71
 Near Sky, The: Circumhorizontal Arcs, 1:75
 Near Sky, The: The Earthshadow, 3:67

Near Sky, The: Lunar Coronas, 5:67
Seven Layers of Light, The, 5:64
Sky at the Capricornus Hour, The, 4:68
Sky at the Scorpius Hour, The, 1:72
Sky at the Summer Triangle Hour, The, 3:64
Sun and Planets, The, 1:74, 2:70, 3:66, 4:70, 5:66, 6:70

Touring the Summer Sky, 2:68
Telescope Making —
Cave Optical Company, 2:88
Design Example: My Dome, 4:93
Geodesic Domes for Amateur Observers, 4:90
Glow-in-the-Dark Planisphere, A, 5:84

Improved Blink Comparator, I:100
Just How Accurate Can a Sundial Be? 6:89
Mirror Support: 3 or 9 Points? 3:84
Optical Bench Talk, 5:86
Precision Sundial of Bronze, A, 6:88
Video Deception? I:103

Selected Topics and Celestial Objects

This listing is not intended to be exhaustive and does not supplant the other parts of the index. For example, material in such regular features as Books & Beyond is ordinarily indexed only under the Departments and Features section.

Amateur activities: in Amazon basin, I:107; asteroid observing, 3:102; Astronomy Camp in Arizona, 5:95; astrophotography during California earthquake, 2:105; dedicated Mars observer, 6:94; Deep Sky Binocular Club, 3:103; estimating Sun's rotation, 1:18; flare star in Eridanus, 2:104; Houston Memorial Fund, 6:8; information via computer networks, 4:6; measuring depth of chromosphere during partial solar eclipse, 5:76; observing Jupiter and Comet Shoemaker-Levy 9, I:31; 4:24; 5:30; observing southern-hemisphere skies from Africa, 3:92; productive variable star observers honored, 5:93; Project Halo, 6:102; resolving Castor, 3:102; at Santa Rita Abbey, Arizona, 1:111; sketching lunar features, 5:91; star-hopping versus computer assistance, 5:6; Texas Star Party, 4:96; traveling planetariums in Argentina, 5:93; visitors center at Lowell Observatory, 2:97; visitors center at Whipple Observatory, 2:96

Art: of Joe Bergeron, I:29; of Christopher Butler, I:30; of Michael Carroll, I:30; of Don Davis, I:29; of Bob Eggleton, I:27; of John R. Foster, I:28; of David A. Hardy, I:24; of William K. Hartmann, I:26; Limbourg brothers' *Trés Riches Heures* of the Duke of Berry, 4:84; of Shigemi Numazawa, I:28; of Kim P. Poor, I:25, 26; of David Seal, I:18, 22; of Joe Shabram, I:27

Asteroids (minor planets): definition of asteroid? 2:6; 13 Egeria, 3:75; 412 Elisabetha, I:83; 15 Eunomia, 3:73; 8 Flora, 5:72; 1620 Geographos, 2:75; 40 Harmonia, 5:72; 895 Helio, 3:73; 85 Io, 2:77; 211 Isolda, I:83; 216 Kleopatra, 2:77; Moon-crossing, I:13; 2309 Mr. Spock, I:9; 51 Nemausa, I:84; 1993 RO, I:10; 1993 RP, I:10; 1993 SB, I:10; 1993 SC, I:10; 1994 ES, I:13; 1994 GK, 4:14; 1994 GL, 4:14; nomen-clature concerns, I:9; orbital evolution of near-Earth, 6:15; 401 Otilia, I:84; trans-Neptunian objects, I:10

Astronomical constants: new Hubble parameter value, 6:10

Atlases and catalogs: catalog of quasars, 6:32

Atmospheric phenomena: circumhorizontal arcs, I:75; earthshadow, 3:67; lunar coronas, 5:67; noctilucent clouds, I:76

Auroras: display on April 16–17, 1994, 5:101; seen from orbit, 4:36

Bioastronomy: possible discovery of glycine in Milky Way, 3:10

Black holes: see *Collapsed objects*

Calendars: Calendar of Coligny, 2:64; early Chinese, 5:9; 6:64; Halloween, 5:60; holiday of Lammas, 2:64;

Trés Riches Heures of the Duke of Berry, 4:84

Celestial mechanics: chaos in orbits, 3:78; resonance between two planets, 3:78

Collapsed objects: binary pulsar B 1957+20, 2:12; black hole at center of M81, 3:13; black hole at center of M87, 2:13; closest pulsar, 4:14; colliding neutron stars as source of gamma-ray bursts, 2:28; red giant with neutron-star core, 5:12

Comets: Borrelly, 3:101; 6:76; fragmented, 6:11; Harrington (1994g), 6:11; Machholz 2, 6:11; McNaught-Russell (1993v), I:10; Nakamura-Nishimura-Machholz (1994m), 3:10; Shoemaker-Levy 9, I:18, 24, 31; 7:12; 4:18, 24; 5:11, 30; 6:9, 97; Takamizawa (1994), I:11; Takamizawa-Levy (1994f), I:10

Computing: asteroid software packages, 1:92; chaos in planetary orbits, 3:78; date of Ansel Adams's *Moon and Half Dome*, 6:82; mirror deformation with three- and nine-point cells, 3:84; sunrise and sunset times at sea level, 2:84

Conjunctions: of comets McNaught-Russell and Takamizawa-Levy, I:10

Constellation study: bogus star names of Dnoes, Navi, and Regor, 4:63; Cepheus, 4:69; 6:68; Cerberus, 3:64; chart using absolute magnitudes, 3:35

Cosmic background radiation: observed from Antarctica, 4:34

Cosmology: abundance of deuterium, 1:11; cosmic density, 1:15; 4:28; dark matter and, 3:12; 4:28; value of Hubble parameter, 6:10

Dark matter: cold and hot mixture, 3:12; 4:31; implied from deuterium abundance, 1:11; MACHOs, 6:13; microlensing, 6:13; very little in M81, 3:13

Detectors: neutrino, I:44

Eclipses:

Lunar: May 24–25, 1994, partial, 4:108; November 17–18, 1994, penumbral, 5:71

Solar: June 19, 1996, total, 6:103; July 11, 1991, total, 5:18, 24; May 10, 1994, annular, I:10; 2:40; 4:8, 98, 100; 5:76; 6:100; November 3, 1994, total, 5:70; October 24, 1995, total, 6:8; measuring depth of chromosphere during, 5:76

Education: Astronomy Camp in Arizona, 5:95; high school students at European Southern Observatory, 3:28

Galaxies: large-scale distribution, 6:14; most distant, 3:22

Active: Arp 220, 4:10; M87's black hole, 2:13; Markarian 1, 4:14; supernova in NGC 3690, 2:17; 3C 84 inside NGC 1275, I:13

Clusters: of Coma, 4:15; group around NGC 7214, 4:16; Hercules, 4:97; most distant, 4:12

Interacting: NGC 4038–39 (Antennae), 6:42

Local Group (see also *Milky Way* and *Magellanic Clouds*): Dwellingloo 1, 5:11; M31, 6:66; M32, 6:66; M33, 6:14; M110, 6:66; new dwarf galaxy, 2:14

Milky Way: extended halo as source of gamma-ray bursts, 2:30; flattened halo of stars? 5:15; heavy elements found, 5:14; metal-poor stars in, 2:16

"Normal": faint blue galaxies, 2:15; M51, I:115; M63, I:115; M64, I:115; M81, 3:12; M84, I:114; M86, I:114; M94, I:115; M98, I:114; M99, I:114; M100, I:114; M106, I:115; NGC 1232, 3:31; NGC 1365, 4:40; NGC 4387, I:115; NGC 4388, I:114; NGC 4402, I:115; NGC 4565, I:115; NGC 6946, 3:42; NGC 6951, 3:42

Gamma-ray astronomy: gamma-ray emissions from star-forming clouds, 3:14; most powerful photon detected, 5:15; origin of bursts, 2:28; 5:15; 6:12; repeating bursts? 5:15

Gravitation: microlensing, 6:13

History: bogus star names, 4:63; Cave Optical Co., 2:88; Chinese measurement of length of year, 6:64; mythology of Saturn, 3:60; past features on Jupiter caused by impacts? 5:34; POW remembers The Great Escape, I:8

Hubble Space Telescope: black hole in M87, 2:13; Eta Carinae's central area, I:12; circumstellar nebula around AG Carinae, 4:13; Comet Shoemaker-Levy 9, I:19; 4:19; diameters of Pluto and Charon, 5:14; protoplanetary disks in Orion Nebula, 4:10; 6:22; repair mission, 2:54; rings of Supernova 1987A, 2:13; signature of intergalactic helium, 4:11; strong stellar wind of R136, 5:13; 47 Tucanae, I:12

Imaging:

Astrophotography: blink comparator with silent electronic circuit, 1:100; digitally enhancing, 5:18, 98; high-speed film, 3:48

Image processing: digitally enhancing photography, 5:18, 98

Infrared astronomy: emission from Io, 3:15; supernova detected in NGC 3690, 2:17

Intergalactic matter: signature of helium, 4:11

Interstellar matter: circumstellar nebula around AG Carinae, 4:13; heavy elements in Milky Way, 5:14; high abundance of aluminum-26, 3:15; possible discovery of glycine, 3:10; protoplanetary disks in Orion Nebula, 4:10; 6:22; ultraviolet observations of interstellar medium, 6:37

Light pollution: contacts for, 4:71; fight in United Kingdom, 2:71

Magellanic Clouds: microlensing in, 6:13

Masers: hydroxyl emission in Arp 220, 4:10; water emission in Markarian 1, 4:14

Meteorites: fall in Quebec, 3:11; injury to driver in Spain, 6:12; new piece from Moon, 4:16; orbits of, 2:16; Peekskill, 2:16; Tunguska impactor, 6:14

Meteors: Delta Aquarid shower, I:84; Eta Aquarid shower, 5:103; clustering of? 2:74; Geminid shower, 6:79; Alpha Lyrids (telescopic shower), I:84; Perseid shower for 1994, 2:72; 5:10; possible new shower near Aries-Triangulum region, 4:108; Quadrantid shower, 5:102; Taurid shower, 5:74; Tunguska explosion of 1908, 3:8

Molecular clouds: in M42, 6:21

Molecules: water in Markarian 1, 4:14

Moon: Apollo astronauts exploring, I:6; Apollo 17 landing site panorama, I:56; Clementine results, 2:20; color of, I:68; new meteorite from, 4:16; rille in Alpine Valley, 4:72; seeing the Apollo 11 landing site, I:80; sketching lunar features, 5:91; ultraviolet image of, 6:40; young-Moon visibility, I:14

Nebulae:

Bright: Cederblad 211, 4:74; M1 (Crab), 3:30; M42 (Orion), 4:10; 6:20; N80, 3:30; NGC 7023, 3:41; NGC 7133, 3:43; Veil, 4:104; Vela, 5:48

Dark: Barnard 111, 3:62; Barnard 119a, 3:62

Planetary: M57 (Ring), I:15; NGC 7009, 3:29; structure of, I:15; used as mass indicator for galaxies, 6:16

Neutrino astronomy: AMANDA detector, I:44; DUMAND detector, I:47; NESTOR detector, I:47; NT-36 detector, I:48; at South Pole, I:44

Neutron stars: see *Collapsed objects*

Observatories:

Amateur and public: geodesic dome designs, 4:90; 24-inch remote access at Mount Wilson, I:38

Professional: in Antarctica, 4:34; European Southern, 3:28; Keck, 3:20

Observing techniques: for Jupiter, I:31; for Mars, 6:73, 94; for noctilucent clouds, I:76; seeing faint deep-sky objects, 4:105; star-hopping versus computer assistance, 5:6; using a Telrad, 4:77; viewing stars in daylight, 3:99

On-line databases and communications (see also *Computing*): amateur astronomers and computer networks, 4:6; Jupiter impact images on Internet, 4:21; remotely operating Mount Wilson telescope, I:38

Optics: cleaning Hale 5-meter primary, 6:26; first adaptive-optics system, 3:8; moving Subaru mirror, 5:38; 72-inch mirror for amateur telescope, 5:86; sharp images with superb optics, 2:36

Organizations: Campaign for Dark Skies, 2:71

People: Apt, J., 4:36; Barnard, E. E., I:72; Byrd, D., 4:98; Cave, T. R., Jr., 2:88; Chen, S., I:111; Cragg, T., I:8; Grissom, V. I., 4:63; Houston, W. S., 6:8; Kunkel, L., 2:99; Mitchell, L., 4:99; Parker, D. C., 3:95; Slonimski, H. S., 3:93; Van Zandt, R. P., 5:94

Planetariums: Apollo landing site panorama, I:56; in the Philippines, 5:93; new digital projector, 5:94; traveling planetariums in Argentina, 5:93

Planets and their satellites: definition of planet? 2:6

Earth (see also *Moon*): coronal mass ejections

and geomagnetic activity, 5:9

Extratellar: evidence for around Beta Pictoris, 3:10; protoplanetary disks in Orion Nebula, 4:10; 6:22

Jupiter: and Comet Shoemaker-Levy 9, 1:18; 24, 31; 2:12; 4:18, 24; 5:11, 30; 6:97; past features caused by impacts, 5:34; thermal energy emitted by Io, 3:15

Mars: 1994-95 apparition, 6:72; observing techniques, 6:94; visible features on, 6:74

Mercury: ice near poles, 4:12

Neptune: satellites of, 3:71

Pluto: albedo maps, 5:14; diameter, 5:14; a major planet? 2:6; 5:8; 6:8

Saturn: mythology of, 3:60; white spot, 6:11

Uranus: satellites of, 3:71

Venus: Schröter effect, 2:102

Pulsars: see *Collapsed objects*

Quasars: buried in Arp 220? 4:10; characteristics of, 6:32; comprehensive catalog of, 6:32; double quasar He 1104-1805, 3:32; high-redshift showing iron emission, 1:14; link to gamma-ray bursts? 6:12; overlooked in red light, 5:10

Radio astronomy: detection of comet impacts on Jupiter, 5:30; Very Long Baseline Array (VLBA), 1:13

Spacecraft (see also *Hubble Space Telescope*): ALEXIS, 4:16; Apollo missions, 1:6; Astro 2, 1:16; Cassini, 2:18; Clementine, 2:20; 5:16; Compton Gamma Ray Observatory, 2:28; 3:14, 16; 5:15; Cosmic Background Explorer, 4:28; Cosmos 1220, 3:69; DC-X, 4:16; *Endeavour*, 4:36; Extreme Ultraviolet Explorer, 6:36; Far Ultraviolet Spectroscopic Explorer, 6:16; Fast Auroral Snapshot Explorer, 2:18; 5:16; Galileo, 1:23; 5:11; Infrared Space Observatory, 3:16; Magellan, 1:16; 6:16; Mars, 1:16; Mars Pathfinder, 6:16; Pegasus, 4:16; Pluto Mission, 3:16; Relativity Mission, 1:16; Scout, 4:16; Seasat, 3:69; Solar, Anomalous, and Magnetospheric Particle Explorer, 5:16; Solar and Heliospheric Observatory, 3:16; SPARTAN 201, 2:18; Stretched Rohini Satellite (SROSS C2), 2:18; Submillimeter Wave Astronomy Satellite, 5:16; Ulysses, 4:16; Wind, 1:16

Star clusters:

Associations: Cepheus OB2, 3:43

Globular: Omega Centauri, 2:12; M2, 1:17; M3, 1:17; M4, 1:17; M5, 1:16; M13, 1:16; M15, 1:17; M22, 1:17; M92, 1:17; NGC 6144, 1:17; 47 Tucanae, 1:12

Open: Collinder 399 (Coathanger asterism).

2:66; Double Cluster, 5:62; 6:46; IC 1396, 3:43;

IC 4665, 1:70; IC 4756, 1:70; M11, 3:62; M29, 4:66;

M39, 4:66; M103, 5:62; NGC 457, 5:62; NGC 663,

5:62; NGC 6633, 1:70; NGC 6939, 3:42; NGC 6940,

4:66; NGC 7129, 3:43; NGC 7160, 3:43; Ruprecht

173, 4:66; Trapezium, 4:10; 6:20

Stars: absolute-magnitude comparisons, 3:35; coronas in ultraviolet light, 6:37; metal-poor in the Milky Way, 2:16; searching for brown dwarfs, 3:22; strong stellar wind of R136, 5:13; Thorne-Zytkow objects, 5:12

Double and multiple: Gamma Arietis, 5:68; Castor, 3:102; Beta Cephei, 3:40; VV Cephei, 3:43; Xi Cephei, 3:43; 77 Piscium, 5:69; 100 Piscium, 5:69; Alpha Piscium, 5:68; Zeta Piscium, 5:69; red giant with neutron-star core, 5:12; Struve 138, 5:69; Struve 146, 5:69; Struve 155, 5:69; Struve 178, 5:69; Struve 2816, 3:43; Struve 2819, 3:43

Individual: Barnard's Star, 1:73; Eta Carinae, 1:12; Eta Carinae, 4:13; AG Cephei, 3:42; Dnoce, 4:63; Navi, 4:63; Beta Pictoris, 3:10; Regor, 4:63; Vega, 6:13

Variable: R Aquarii, 4:74; Gamma Cassiopeiae, 5:62; Beta Cephei, 3:40; Mu Cephei, 3:43; T Cephei, 3:41; flare stars observed in ultraviolet, 6:38; possible flare star in Eridanus, 2:104

Sun: coronal mass ejections and geomagnetic activity, 5:9; estimating rotation from sunspot observation, 1:118; magnetic-field reversals, 5:25; measuring depth of chromosphere during partial eclipse, 5:76; structure of corona and solar cycle, 5:24

Sundials: accuracy of, 6:89; Charles Avila's bronze, 6:88; measuring ultraviolet strength, 1:94

Supernovae: element distribution of Crab Nebula, 3:30; in NGC 3690, 2:17; rings around Supernova 1987A, 2:13; SN 1993af in NGC 1808, 3:32; SN 1994S, 4:99

Telescope making: Armorial to reduce friction, 5:87; deformation with three- and nine-point mirror cells, 3:84; history of Cave Optical Co., 2:88; illuminated planisphere, 5:84; Ponct platform, 2:52; video enhancement of the Foucault knife-edge test, 1:103; David Wile's collimating tool, 5:88

Telescopes:

Amateur: Group 70's 72-inch mirror, 5:86

Professional: Astrophysical Research Consortium (3.5-meter), 1:10; Hale (5-meter), 6:26; Hooker (100-inch), 4:15; Keck (10-meter), 1:11; Magellan (6.5-meter), 3:13; Multiple Mirror Telescope (6.5-meter), 3:13; Subaru (8.3-meter), 3:14; 5:38; Universidad Nacional Autónoma de México (6.5-meter), 3:13; Very Large Telescope (16-meter), 3:14; 5:10; Very Long Baseline Array (VLBA), 1:13

Timekeeping: accuracy of sundials, 6:89

Ultraviolet astronomy: all-sky survey, 6:36; flare stars, 6:37; interstellar medium, 6:37; stellar coronas, 6:37

Very large-scale structure: and dark matter, 4:28; shell of galaxies around local supercluster, 6:14

X-ray astronomy: hot gas in Coma Cluster of galaxies, 4:15

FREE CATALOG

Call toll-free for a copy
of Sky Publishing's
new 1995 catalog of
astronomy books,
posters, videos,
and more.

800-253-0245

Attention Please:

LOSMANDY PRECISION EQUATORIAL MOUNTS

GM8, G11, GM200,
Equipment Load Capacities
from 30 lbs to 150 lbs

Expert Sales & Service
Complete Secondary System
Hardware for Any Imaginable
Equipment Combination!

Call Mon-Fri

9 to 5 Calif time. (800) 735-1352

or Write or Fax for Free
Brochure

NEW!

from
Spectra
Astro • Systems

fax# 818-996-7698...24 hrs

6631 Wilbur Ave., Suite 30

Reseda, CA 91335



\$795⁰⁰

NIGHT EXPLORER POCKETSCOPE

- II & III Gen.
- New w/Excellent Cond. Intensifier



\$350⁰⁰

IMAGE INTENSIFIER

- 1st Gen. 40 mm
- S-20 Photocathode/P20 Screen
- Uses (4) 1.5v Batteries
- Comes w/Power Supply
- Excellent Condition



M18

INFRARED BINOCULAR (Recond.)

- 4.5x Optics
- "Cat" Lenses
- Uses 1 "C" Battery
- S-1 Photocathode



\$295⁰⁰

Catalog \$4⁰⁰

Prod. Video \$10⁰⁰

STANO Components

P.O. Box 2048 • Carson City, NV 89702
(702) 246-5281 • (702) 246-5283 • FAX (702) 246-5211

